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**Apparatus for positioning further processing devices on
printing presses**

5 The invention relates to an apparatus for positioning
further processing devices on printing presses,
according to the features of patent claim 1.

10 In printing presses, it is generally known to provide
devices with which the printed products can be
processed further. Devices of this type are arranged
after the printing line and can, for example, fold a
printed web longitudinally and/or transversely, cut it
and/or stack the products. Likewise, devices are also
15 known which wind the printed web up again into a roll.
Usually, however, printing presses are equipped only
with one device of this type and it is only possible to
exchange one for another after the printing press has
been installed by rebuilding it, which is associated
20 with great installation complexity. As lengthy
rebuilding work of this type is not possible between
two print jobs, the further processing of the printed
products is restricted to the possibilities of the
installed devices.

25 Proceeding from this, it is the object of the invention
to provide an apparatus which makes it possible to
exchange devices of this type simply on printing
presses.

30 According to the invention, this object is achieved by
the features of patent claim 1.

The apparatus according to the invention makes it
35 possible, in an advantageously simple manner, to

exchange various further processing devices on a printing press, for example a sheet stacker, folder or roll winding-up means. For this purpose, the invention provides a fixed positioning device on the floor and a further corresponding positioning device on the further processing device, which positioning devices can be brought into engagement with one another and also detached from one another simply. As a result, simple and rapid exchanging is possible, which permits flexible further processing of the printed paper web or other printed products.

It is advantageous to provide a movable frame for each further processing device, using which they can be moved to the printing press simply and the positioning devices can be brought into engagement with one another or detached from one another by a raising/lowering mechanism.

It can be advantageous to provide additional means for fixing the further processing devices on the floor.

Further features and advantages emerge from the subclaims in conjunction with the description.

In the following text, the features of the present invention will be explained in greater detail using preferred embodiments. In the associated diagrammatic drawings:

fig. 1 shows an exemplary web-fed printing press having a roll winding-up means which is positioned in accordance with the invention,

figs. 2abc show the enlarged detail X from fig. 1 as a further processing device is being positioned on a movable frame,

5 fig. 2d represents the detail Y from fig. 2c on an enlarged scale, and

fig. 3 shows the view A from fig. 1.

10 Figure 1 shows, by way of example, a web-fed printing press, comprising an unwinding device 1, threading unit 2, a plurality of printing units 3, 4 and a dryer 5 for drying the printing material web 6 on which the ink is still wet. In this example, the printing material web
15 6 is wound onto a roll by a roll winding-up system 7. All the modules are arranged on a preferably flat floor 8. The roll winding-up system 7 is equipped with positioning apparatuses according to the invention and can be exchanged, for example, for a cross cutter
20 having a sheet stacker, or for a folder. In this exemplary embodiment, the further processing devices are arranged on movable frames which can be raised and lowered.

25 Instead of with a movable frame, it is also possible to move the further processing devices with other lifting gear, such as a machine-house crane, and to position them on the printing press using the positioning apparatus according to the invention.

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The details of the positioning apparatus can be seen in fig. 2 which shows the detail X on an enlarged scale.

Fig. 2a shows a base region of the frame 10, on which
35 the further processing device is arranged, for example

a winding-up system, a sheet stacker or a folder. The frame 10 preferably has four contact points which can be lifted by means of lifting apparatuses 11, with the result that the frame 10, together with the further processing device, can be moved on rollers 12. Fig. 2a illustrates the raised position of a contact point while the frame 10 is moved to the printing press (not shown), preferably on steerable rollers 12. U-shaped receptacles 16 can be provided on the frame 10 for prepositioning the further processing device roughly, which receptacles 16 are pushed onto cylindrical bolts 15 fastened to the floor 8 when the frame 10 is moved closer. As can be seen from fig. 2b, the frame 10 is prepositioned as a result of the receptacles 16 being pushed onto the bolts 15 completely, in such a way that a first positioning device 13 arranged on the frame 10 is situated approximately above a further positioning device 14 which is fixed to the floor 8. The first positioning device 13 preferably has a conical outer contour which, when the frame 10 is lowered, is lowered into the other positioning device 14, which is formed as a conical recess on the floor 8, and therefore positions the frame 10 with the further processing device by means of the form-fitting connection between the inner and outer cone. It is of course also possible to provide other suitable shapes on the positioning devices 13, 14. The bolt 15 and the associated positioning device 14 are preferably arranged on a common plate 23 (fig. 2d) which is fixed to the floor 8.

The completely lowered frame 10 is shown in fig. 2c. In this position, the raising/lowering device 11 is completely relieved of load. A hydraulic cylinder is actuated to raise the frame 10, as a result of which

the pivotably attached wheel 12 is tensioned against the floor 8 and as a result lifts up the frame 10. A plurality of raising/lowering apparatuses 11 are preferably provided for one frame 10, the former being
5 actuated simultaneously in order that the further processing device is raised or lowered perpendicularly. In accordance with the detail Y from fig. 2c, the interaction of the positioning devices 13, 14 is shown in fig. 2d on an enlarged scale..

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A plate 23 can be seen in fig. 2d, the former being fixed to the floor 8 by means of screws 24, having a conical recess 14 and bearing a bolt 15. The conical outer contour 13 is accommodated in the conical recess
15 14 and therefore defines the position of the contact point in the plane of the floor (in the x-y direction). In order for it to be possible to bring the positioning devices 13 and 14 simply into engagement with one another, the height of the bolt 15 is such that it can
20 be moved to by the receptacle 16 in the raised position and the receptacle 16 can be guided on it during lowering. There can be some play here between the receptacle 16 and bolt 15, because the position of the conical fit of the positioning devices 13, 14 is self-
25 centering.

In order to set a plurality of further processing devices on different frames 10 to a positioning device 14 anchored on the floor 8, the positioning device 13
30 on the frame 10 can be arranged so as to be adjustable in the horizontal plane (x-y direction). In order for it to be possible to predefine the height (z direction) of the frame 10 and the further processing device, the positioning device 13 can be height-adjustable. For
35 this purpose, in the exemplary embodiment shown, the

positioning device 13 is arranged on a threaded bolt 20 which is screwed into an internal screw thread on the frame 10 in accordance with the desired height and is secured with a further nut 22.

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A base piece 21 which absorbs the weight of the frame 10 can additionally be provided on the positioning device 13. The base piece 21 has to be arranged in such a way that it absorbs the force as soon as the positioning devices 13, 14 are joined to one another without play. The base piece 21, the positioning device 13 and the threaded bolt 20 can be produced as a single piece or be assembled from a plurality of parts.

15 Fig. 3 is a plan view, with the view A from fig. 1, of a frame 10. It is advantageous to provide in each case two positioning devices 13, 14, in order, in addition to the position, to also define the angular orientation of the further processing device in relation to the dryer 5 of the printing press. It can be seen how two
20 receptacles 16 are prepositioned on bolts 15 and how, during lowering, the position and angular orientation of the frame 10 are defined unambiguously by two positioning devices 13, 14 arranged at a distance from
25 one another.

In general, the weight of the further processing device and of the frame 10 ensures reliable stability which is sufficient for operation. However, additional
30 tensioning means can be provided, such as brackets, using which the frame 10 is tensioned against the floor 8 at the contact points.

The essential core of the invention is to be seen in
35 the fact that one or more fixed positioning devices are

arranged in relation to a printing press, which positioning devices interact with further positioning devices attached to mobile further processing devices, in such a way that their relative position with respect to the printing press is defined in a reproducible manner. It is possible to provide as many and varied further processing devices as desired with the corresponding positioning devices and to align them with their fixed counterparts, with the result that said further processing devices are positioned on the printing press rapidly and are ready for use in a very short time, without further adjusting effort and other adaptation work.

List of reference symbols

1	Unwinding device
2	Threading unit
3	Printing unit
4	Printing unit
5	Dryer
6	Printing material web
7	Winding-up system (cross cutter, folder superstructure)
8	Floor
10	Frame
11	Raising/lowering device
12	Wheel/roller
13	Positioning device (conical outer contour)
14	Positioning device (conical recess)
15	Bolt
16	Receptacle
20	Threaded bolt
21	Base piece
22	Nut
23	Plate
24	Screw